UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

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First Named Inventor or Application Identifier	
SHINYA GOTO	
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APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. [ ] Fee Transmittal Form
(Submit an original, and a duplicate for fee processing)

2. [X] Specification — *Total Pages* 31

3. [X] Drawing(s) *(35 USC 113)* — *Total Sheets* 7

4. [X] Oath or Declaration — *Total Pages* 1

   a. [X] Newly executed (original or copy)

   b. [ ] Unexecuted for information purposes

   c. [ ] Copy from a prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 17 completed)
[Note Box 5 below]

     i. [ ] DELETION OF INVENTOR(S)
Signed Statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).

5. [ ] Incorporation By Reference *(useable if Box 4c is checked)*
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4c, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

Assignment and $40.00

6. [ ] Microfiche Computer Program *(Appendix)*

7. Nucleotide and/or Amino Acid Sequence Submission *(if applicable, all necessary)*

   a. [ ] Computer Readable Copy

   b. [ ] Paper Copy (identical to computer copy)

   c. [ ] Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. [X] Assignment Papers (cover sheet & document(s))

9. [ ] 37 CFR 3.73(b) Statement *(when there is an assignee)* — [ ] Power of Attorney

10. [ ] English Translation Document *(if applicable)*

11. [ ] Information Disclosure Statement (IDS)/PTO-1449 — [ ] Copies of IDS Citations

12. [ ] Preliminary Amendment

13. [X] Return Receipt Postcard (MPEP 503) *(Should be specifically itemized)*

14. [ ] Small Entity Statement(s) — [ ] Statement filed in prior application Status still proper and desired

15. [ ] Certified Copy of Priority Document(s) *(if foreign priority is claimed)*

16. [ ] Other: _____

17. If a CONTINUING APPLICATION, *check appropriate box and supply the requisite information:*

[ ] Continuation   [ ] Divisional   [ ] Continuation-in-part (CIP)   of prior application No. ___/_____

18. CORRESPONDENCE ADDRESS

[X] Customer Number or Bar Code Label   05514 *(Insert Customer No. or Attach bar code label here)*   or [ ] Correspondence address below

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CLAIMS	(1) FOR	(2) NUMBER FILED	(3) NUMBER EXTRA	(4) RATE	(5) CALCULATIONS
	TOTAL CLAIMS (37 CFR 1.16(c))	22-20 =	2	X $ 18.00 =	$ 36.00
	INDEPENDENT CLAIMS (37 cfr 1.16(b))	9-3 =	6	X $ 78.00 =	$ 468.00
	MULTIPLE DEPENDENT CLAIMS (if applicable) (37 CFR 1.16(d))			$260.00 =	$ 260.00
				BASIC FEE (37 CFR 1.16(a))	$ 690.00
			Total of above Calculations =		$1454.00
	Reduction by 50% for filing by small entity (Note 37 CFR 1.9, 1.27, 1.28).				
				TOTAL =	$1454.00

19. Small entity status

   a. ☐ A Small entity statement is enclosed

   b. ☐ A small entity statement was filed in the prior nonprovisional application and such status is still proper and desired.
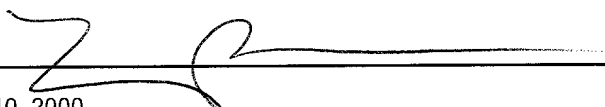
   c. ☐ Is no longer claimed.

20. ☒ A check in the amount of $ 1454.00 to cover the filing fee is enclosed.

21. ☒ A check in the amount of $ 40.00 to cover the recordal fee is enclosed.

22. The Commissioner is hereby authorized to credit overpayments or charge the following fees to Deposit Account No. 06-1205:

   a. ☒ Fees required under 37 CFR 1.16.

   b. ☒ Fees required under 37 CFR 1.17.

   c. ☐ Fees required under 37 CFR 1.18.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED	
NAME	Leonard P. Diana (29,296)
SIGNATURE	
DATE	April 10, 2000

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CHARACTER-STRING INFORMATION OUTPUT APPARATUS,

CHARACTER-STRING INFORMATION OUTPUT SYSTEM,

CHARACTER-STRING INFORMATION OUTPUT METHOD,

CHARACTER-STRING INFORMATION INPUT APPARATUS,

5   CHARACTER-STRING INFORMATION INPUT SYSTEM,

CHARACTER-STRING INFORMATION INPUT METHOD,

STORAGE MEDIUM AND

CHARACTER-STRING INFORMATION RECORDING APPARATUS

10   BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a character-string information output apparatus for outputting character string information in a command format. It

15   also relates to a character-string information output system, a character-string information output method, a character-string information input apparatus, a character-string input system, a character-string information input method, a storage medium and a

20   character-string information recording apparatus, for use with the character-string information output apparatus.

Related Background Art

For this type of image pick-up apparatus or

25   electrophotographic image processing apparatus, a standard, called Digital Print Order Format (DPOF: a pending trademark), has recently been established. The use of a specific file (DPOF file) on a recording

medium with images taken by a digital camera thereon allows a user to select an image to be printed at a lab or on a printer, or to specify the number of copies to be printed.

5   The contents of the specific file are interpreted at the lab or on the printer, so that the image taken by the digital camera and specified by the user can be printed as specified.

The specific file on the recording medium contains

10   a command with a character string such as the useris name or address recorded therein. However, the current DPOF version 1.00 only supports ASCII codes as single-byte character strings or Shift_JIS codes as double-byte character strings.

15   The conventional DPOF is adaptable to languages represented by 26 letters of the alphabet like English and languages represented in Shift_JIS code like Japanese, but it is not adaptable to the other languages such as some European languages like German,

20   Russian, Thai, Arabic and Greek.

Further, if a command with a character string in Shift_JIS code is processed in a Shift_JIS-incapable electrophotographic image processing apparatus, the resulting printout or display can carry unexpected

25   symbols or characters.

The current DPOF version may be updated so that the command can be specialized in a universal character

code, such as Unicode, different from the conventional

character codes. In this case, however,

electrophotographic image processing apparatuses

adapted to old commands alone can also print out or

5   display unexpected symbols or characters.

It is therefore an object of the present invention

to provide a character-string information output

apparatus, a character-string information output

system, a character-string information output method, a

10   character-string information input apparatus, a

character-string information input system, a character-

string input method, a storage medium and a character-

string information recording apparatus, all of which

can avoid any confusion due to a difference between

15   character-string commands, and improve their

expandability.

SUMMARY OF THE INVENTION

In one aspect of the present invention, there is

20   provided a character-string information output

apparatus for outputting character string information

in a command format. The character-string information

output apparatus comprises a search means that performs

searches for plural commands identical in content, a

25   command extraction means that extracts an interpretable

command from the searched plural commands, and a

character-string information output means that outputs

the character string information of the extracted command.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram illustrating the structure of an image writing apparatus (writer);

Fig. 2 is a block diagram illustrating the structure of an electrophotographic image processing apparatus (reader);

Fig. 3 is a flowchart illustrating the process to input character-string command information as the electrophotographic image processing in the image writing apparatus (writer);

Fig. 4 is a diagram illustrating string-character commands that the image writer has recorded through a card drive 104 into a specific file (DPOF file) on a nonvolatile memory card such as a compact flash card;

Fig. 5 is a flowchart illustrating the process to output character-string command information as the electrophotographic image processing in the electrophotographic image processing apparatus (reader);

Figs. 6A, 6B and 6C are diagrams illustrating memory maps on ROMs 101 and 201 as storage media;

Fig. 7 is a front view illustrating the appearance of a digital camera according to a second embodiment of the present invention;

Fig. 8 is a flowchart illustrating the process to input character-string command information according to the second embodiment of the present invention; and

Fig. 9 is a flowchart illustrating the process to input character-string command information according to a third embodiment of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following describes embodiments of the present invention, including a character-string information output apparatus, a character-string information output system, a character-string output method, a character-string input apparatus, a character-string information input system, a character-string information input method, a storage medium and a character-string information recording apparatus.

[First Embodiment]

In the first embodiment, the character-string information output apparatus is embedded in an electrophotographic image processing apparatus. Fig. 1 is a block diagram illustrating the structure of an image writing apparatus (writer) according to the first embodiment. In Fig. 1, a microcomputer (CPU) 100 executes electrophotographic image processing.

A ROM 101 stores an electrophotographic image processing program (character-string command information input processing program) executed by the

CPU 100 and other data. A RAM 102 is used as a working area of the electrophotographic image processing program, and as an area for temporarily storing image data read in from a camera portion 103.

5   The camera portion 103 is composed of a lens, a CCD and the like; it is operative to take in image data. A card drive 104 records the image data, which has been read in from the camera portion 103 and processed by the CPU 100, on a nonvolatile memory such

10   as a compact flash card.

A CPU bus 105 connects the CPU 100, the ROM 101, the RAM 102, the camera portion 103, the card drive 104, an interface 106, an LCD 107 and an operation portion 108. The CPU bus 105 is a generic name for an

15   address bus transferring address signals, a control bus transferring control signals, and a data bus transferring several kinds of data.

The interface (I/F) 106 communicates with external apparatuses such as a personal computer through a

20   serial port or the like. The LCD 107 provides display of images photographed by the camera portion 103 so that the user can confirm the images. The operation portion 108 includes keys, switches and a release button that allow useris operation to register his or

25   her name.

Fig. 2 is a block diagram illustrating the structure of an electrophotographic image processing

apparatus (reader). In Fig. 2, a microcomputer (CPU) 200 executes electrophotographic image processing.

A ROM 201 stores an electrophotographic image processing program (character-string command information input processing program) executed by the CPU 200, font information and other data.

A RAM 202 is used as a working area of the electrophotographic image processing program, and as an area for temporarily storing image data and its related character-string information read in from a card read drive 204.

A printer 203 prints out images processed by the CPU 200. The card read drive 204 reads out an image, which has been taken by a digital camera or the like and stored on a PC card or the like, and its related character-string information.

A CPU bus 205 connects the CPU 200, the ROM 201, the RAM 202, the printer 203, the card read drive 204, an interface 206 and an operation portion 207. The CPU bus 205 is a generic name for an address bus transferring address signals, a control bus transferring control signals, and a data bus transferring several data.

The interface (I/F) 206 communicates with other digital apparatuses through a serial port or the like. The operation portion 207 includes keys and switches that allow user's operation to decide image data to be

printed.

Fig. 3 is a flowchart illustrating the process to input character-string command information as electrophotographic image processing in the image writing apparatus (writer). The processing program is stored in the ROM 101 of the image writer and executed by the CPU 100. The processing is started in response to input of an instruction to input character-string information of specific content from the operation portion 108.

The image writing apparatus first executes support command processing that analyzes commands identical in information content to the character-string information to which the input instruction has been issued. For example, it analyzes the commands that can support the user's name (step S1).

Fig. 4 is a diagram illustrating character string commands that the image writing apparatus has recorded through the card drive 104 into a specific file (DPOF file) on a nonvolatile memory card such as a compact flash card. Command 1 stores a user's name in a character string of ASCII codes. Command 2 stores the same user's name in a Unicode character string. Each command is composed of a tag 4 indicative of the kind of command, a part indicative of the data type 5 to be stored, a part indicative of the command length 6 and a data part 7. Plural character-string commands for one

user's name are thus stored in the DPOF file.

Turning back to Fig. 3, command termination processing is executed to determine whether the support commands analyzed in step 1 are all listed on the nonvolatile memory through the card drive 104 (step S2). If all the commands have been listed, the processing ends. If all the commands have not been listed yet, command input processing is executed to write, onto the nonvolatile memory through the card drive 104, one of the commands capable of supporting the content specified by the character-string input instruction (step S3). For example, either command 1 or command 2 shown in Fig. 4 is written. After that, the procedure returns to step S2.

Fig. 5 is a flowchart illustrating the process to output character-string information as electrophotographic image processing in the electrophotographic image processing apparatus (reader). The processing program is stored in the ROM 201 and executed by the CPU 200.

The processing program is started in response to input of an instruction from the operation portion 207 to output character-string information of specific content written in a specific file (DPOF file) that conforms with the DPOF standard.

The DPOF file on the nonvolatile memory is first searched through the card read drive 204 for all the

commands that include the corresponding content (step
S11).   If the character-string information output
instruction is issued for the userís name, searches for
all the commands that include the userís name.   For
example, commands 1 and 2 are searched in the case
shown in Fig. 4.

From among the searched commands, a command that
the electrophotographic image processing apparatus can
support is extracted (step S12).   For example, of the
commands shown in Fig. 4, if the electrophotographic
image processing apparatus can interpret command 1 in
ASCII code, but it cannot interpret command 2 in
Unicode, only command 1 is regarded as a target command
for the electrophotographic image processing apparatus.

Then, the ROM 201 is searched to determine whether
the electrophotographic image processing apparatus has
font information to output the character-string
information included in the extracted command (step
S13).

It is then determined, based on the font
information searched, whether it is possible to output
the character-string information (step S14).   If
possible to output, the character string is output
(step S15), and the processing ends.   The character
string is output in step S15 as follows.   The
character-string information of the command searched
from the DPOF file in accordance with the character-

string output instruction is output to the printer 203 based on the font information stored in the ROM 201. After that, the processing ends. On the other hand, if it is determined in step S14 that it is impossible to output the character-string information, the processing ends as it stands.

If the electrophotographic image processing apparatus has no font information corresponding to the character-string information of the command extracted in step S12, it may output the character-string information based on another font information, or it may output nothing after all.

If it is found in step S14 that the electrophotographic image processing apparatus can output plural types of commands, it can decide which command should be output based on predetermined priorities stored in the ROM 201, or it can leave the selection to the userís discretion.

Thus, the image writing apparatus can write down plural commands corresponding to the languages that the image writer supports, while the electrophotographic image processing apparatus can selectively output at least one command corresponding to the language that the electrophotographic image processing apparatus supports. It is therefore possible to prevent any error in printing or displaying the character-string information.

It should be noted that commands used in the embodiment, such as ones as illustrated in Fig. 4, are all written in data formats based on standards such as DPOF to which the electrophotographic image processing

5   apparatus conforms.

Further, in the embodiment, the image writing apparatus (writer) and the electrophotographic image processing apparatus (reader) are separately provided in the system, but both may be formed as one unit. For

10   example, if a camera with a display provides functions for a user to input his or her userís name and confirm it on the display, both the writer and reader facilities can be embodied in the camera.

Furthermore, in the embodiment, the means for

15   transmitting information from the writer to the reader is illustrated as a nonvolatile memory for use with the card drive 104 of Fig. 1 and the card read drive 204 of Fig. 2. But, instead of using the nonvolatile memory, the information may be transmitted through the

20   interface 106 of Fig. 1 and the interface 206 of Fig. 2.

Furthermore, the embodiment takes an electrophotographic image processing apparatus as an example of reader, but the present invention is not

25   limited to the embodiment and it is applicable to other types of image reader such as a video deck.

The present invention is also applicable to both a

system composed of plural pieces of equipment and a single apparatus. Further, the present invention is applicable to a program to be implemented in the system or apparatus. In this case, the program represented by

5 software that realizes the present invention is stored in a storage medium so that the system or apparatus can read out the program from the storage medium. The storage medium thus allows the system or apparatus to take advantage of the present invention.

10 Figs. 6A to 6C show memory maps on the ROMs 101 and 201 as storage media. Fig. 6A is a memory map on the ROM 101, on which several kinds of information including a program module for character-string command information input processing, as illustrated in the

15 flowchart of Fig. 3, are stored. Fig. 6B shows a memory map on the ROM 201, on which several kinds of information including a program module for character-string command information input processing, as illustrated in the flowchart of Fig. 5, and the font

20 information are stored. Fig. 6C shows another memory map on the ROM 101, on which several kinds of information including a program module for character-string command information input processing according to the second embodiment, as will be described later

25 along a flowchart of Fig. 8, a program module for character-string information input processing according to the third embodiment, as will be described later

along a flowchart of Fig. 9, and the font information
are stored. The storage medium that supplies these
program modules may be a floppy disk, a hard disk, an
optical disk, a magneto-optical disk, a CD-ROM, a CD-R,

5   a DVD, a magnetic tape and a nonvolatile memory card.

[Second Embodiment]

The second embodiment illustrates a case in which
the present invention is applied to a digital camera
having a function as a writer. Fig. 7 is a front view

10   illustrating the appearance of a digital camera
according to the second embodiment. Arranged on the
front side of the camera body are the LCD 107 and the
operation portion 108 shown in the first embodiment.
Since the basic hardware configuration of the digital

15   camera is the same as that of the first embodiment,
portions identical to those in the first embodiment are
given the same reference numbers to omit the
description.

The operation portion 108 has ten keys 111 for

20   input of character string information. These ten keys
111 are capable of inputting Kana, Kanji or
alphanumeric characters depending on the input mode
selected. The operation portion 108 also has an input-
mode selection key 112, a Kana-Kanji conversion key

25   113, a decision key 114, and a menu key 115 that makes
an operation menu displayed.

The LCD 107 displays not only an image to be

photographed or a photographed image, but also

character information such as menu information to

instruct the user to select a character input mode and

character string information input by the user.

5   The following illustrates how to input character-

string command information through the operation

portion 108 and the LCD 107 of the digital camera.

Fig. 8 is a flowchart illustrating the process to input

character-string command information according to the

10   second embodiment. The processing program is stored in

the ROM 101 mounted in the digital camera, and executed

by the CPU 100. It is started in response to input of

an instruction from the operation portion 108 to input

character string information of specific content.

15   The user first uses the menu key and others on the

operation portion 108 to issue an input instruction of

a character string such as his or her name (step S21).

Upon receipt of the character-string input instruction,

support command extraction is executed (step S22). In

20   the support command extraction processing, the digital

camera used as a writer (character-string information

input apparatus) analyzes information identical in

content such as the number of commands that the digital

camera can support for the userís name. In this case,

25   command 1 written as an ASCII character string and

command 2 written as a Unicode character string are

regarded as supportable or compatible character strings

(refer to Fig. 4).

Then, font information search is executed (step S23). For example, in the font information search processing, a search is made for font information that provides representations of the Unicode command 2 on the LCD 107. The embodiment assumes that the digital camera can support both alphanumeric character strings in ASCII code and Japanese Kana-Kanji character strings in Unicode.

Based on the information determined at steps S22 and S23, the number of combinations of commands and languages the user can input is checked to determine whether the next character-string information input processing of steps S25 and S26 is completed (step S24). In the embodiment, it is determined whether both the step of inputting command 1 as an alphanumeric character string in ASCII code, and the step of inputting command 2 as a Kana-Kanji character string in Unicode are completed.

If determined at step S24 that the character-string information input processing is completed, the processing ends. On the other hand, if determined at step S24 that the character-string information input processing is not completed, character-string input guidance is given to the user as a display on the LCD 107 (step S25) to urge the user to input a character string. The character-string input guidance shows, as

the display on the LCD 107, commands and languages that the digital camera supports. Then, after the user inputs a character string, the procedure returns to step S24.

In the case where the character-string input guidance of step S25 is given for the first time, the user is urged to input his or her name as an alphanumeric character string in ASCII code. Then, in the character-string input processing of step S26, the user inputs an alphanumeric character string by pushing the input-mode selection key 112 and the ten keys 111 on the operation portion 108, and decides the character string by pushing the decision key 114 to end the input process. After completion of the input processing, command 1 with the ASCII character string is written onto the nonvolatile memory through the card drive 104.

Next time the character-string input guidance of step S25 is given, the user is urged to input his or her name in Japanese as a Unicode character string. Then, in the character-string input processing of step S26, the user inputs a Japanese character string consisting of Kana and Kanji characters by pushing the input-mode selection key 112 and the ten keys 111 on the operation portion 108, and decides the character string by pushing the decision key 114 to end the input process. After completion of the input processing, command 2 with the Unicode character string is written

onto the nonvolatile memory through the card drive 104.

In the second embodiment, the character-string input guidance is given to the user as a display on the LCD 107 to urge the user to input character strings step by step, thus improving its operability.

[Third Embodiment]

The third embodiment is also applied to a digital camera similar in type to that of the second embodiment. However, the third embodiment is different from the second embodiment in that the third embodiment can store plural commands that the digital camera automatically supports in response to one-time character-string input from the user. In contrast, the second embodiment requires the user to perform character-string input for each individual command and language that can be input in the character-string input process.

Fig. 9 is a flowchart illustrating the process to input character-string command information according to a third embodiment of the present invention. The processing program is stored in the ROM 101 mounted in the digital camera, and executed by the CPU 100.

The user first uses the menu key and others on the operation portion 108 to issue an input instruction of a character string such as his or her name (step S31). Upon receipt of the character-string input instruction, support command extraction is executed (step S32). In

the support command extraction processing, the digital
camera used as a writer (character-string information
input apparatus) analyzes information identical in
content such as the number of commands that the digital

5   camera can support for the userís name. The embodiment
assumes that the digital camera can support command 1
as an ASCII character string and command 2 as a Unicode
character string, both of which are shown as command
examples in Fig. 4.

10   Then, font information search is executed (step
S33). For example, in the font information search
processing, a search is made for font information that
provides representations of the Unicode command 2 on
the LCD 107. As mentioned above, the embodiment

15   assumes that the digital camera can support both
alphanumeric character strings in ASCII code and
Japanese Kana-Kanji character strings in Unicode.

Then, input guidance is given to the user as a
display to urge the user to input his or her name in

20   Japanese (step S34). In the character-string input
processing, the user inputs a Japanese character string
consisting of Kana and Kanji characters by pushing the
input-mode selection key 112 and the ten keys 111 on
the operation portion 108, and decides the character

25   string by pushing the decision key 114 to end the input
process (step S35).

Based on the information determined at steps S32

and S33, the number of combinations of commands and languages the user can input is checked to determine whether the character-string information command input processing is completed (step S36). In the embodiment,

5 since both the step of inputting command 1 as an alphanumeric character string in ASCII code and the step of inputting command 2 as a Kana-Kanji character string in Unicode are possible, it is determined whether both steps of command input are completed or

10 not. If one of the command input steps is not completed, an incomplete character-string command to be inputted in each command input process is written onto the nonvolatile memory through the card drive 104 (step S37). After that, the procedure returns to step S36.

15 On the other hand, if both the command input steps are completed, the processing ends that instant.

In the first command input processing of step S37, the Japanese character string inputted at step S35 is converted into command 1 of an ASCII character string

20 and written onto the nonvolatile memory through the card drive 104.

In the next processing of step S37, the Japanese character string inputted at step S35 is converted into command 2 of a Unicode character string and written

25 onto the nonvolatile memory through the card drive 104.

Thus, the third embodiment can store plural commands that the digital camera automatically supports

in response to one-time character-string input from the user.

As described above, the present invention allows specific character codes different from each other to

5   be recorded on a recording medium as different commands. Of these commands, the command that the output apparatus can interpret can be selectively used to make an output. This makes it possible to avoid any confusion due to a difference between character-string

10   commands, and hence to provide a character-string information output apparatus with improved expandability.

WHAT IS CLAIMED IS:

1. A character-string information output apparatus for outputting character string information in a command format, comprising:

5   a search means that performs searches for plural commands identical in content;

a command extraction means that extracts an interpretable command from the searched plural commands; and

10   a character-string information output means that outputs the character string information of the extracted command.

2. A character-string information output
15 apparatus according to claim 1, further comprising

a font information search means that performs a search for font information corresponding to the character string information of the extracted command, wherein

20   said character-string information output means outputs the character string information based on the font information searched by said font information search means.

25   3. A character-string information output apparatus according to claim 1, wherein said character-string information output means outputs character

string information of at least two commands, one having
character string information compatible with a limited
language alone, and the other having character string
information compatible with plural languages.

5

4. A character-string information output
apparatus according to claim 1 or 2, wherein a command
with an interpretable character string is automatically
selected and outputted.

10

5. A character-string information output
apparatus according to claim 2, wherein if there is no
font information corresponding to the character string
information of the extracted command, the character
15 string information is outputted based on another font
information.

6. A character-string information output
apparatus according to claim 2, wherein if there is no
20 font information corresponding to the character string
information of the extracted command, the character
string information is not outputted.

7. A character-string information output system
25 provided with a character-string information recording
apparatus and a character-string information output
apparatus, wherein

said character-string information recording

apparatus comprises:

a command analyzing means that analyzes

plural commands with character string information

5   identical in content; and

a command recording means that records the

analyzed plural commands, and

said character-string information output apparatus

comprises:

10   a search means that performs searches for

plural commands with character string information

identical in content;

a command extraction means that extracts an

interpretable command from the searched plural

15   commands; and

a character-string information output means

that outputs the character string information of the

extracted command.

20   8.   A character-string information output method

comprising the steps of:

analyzing plural commands with character string

information identical in content;

recording the analyzed plural commands;

25   performing searches for plural commands with the

character string information identical in the content;

extracting an interpretable command from the

searched commands; and

outputting the character string information of the extracted command.

5   9. A storage medium in which a computer-readable program is stored, wherein said program comprises the steps of:

analyzing plural commands with character string information identical in content;

10   recording the analyzed plural commands;

performing searches for plural commands with the character string information identical in the content;

extracting an interpretable command from the searched commands; and

15   outputting the character string information of the extracted command.

10. A character-string information recording apparatus for recording inputted character-string

20 information in a command format, comprising:

a command analyzing means that analyzes plural commands with character string information identical in content; and

a command recording means that records the analyzed plural commands.

25

11. A character-string information input

apparatus for inputting character string information in a command format, comprising:

an input instructing means that instructs input of character string information;

a search means that performs searches for plural commands with character string information identical in content to the character string information the input of which has been instructed;

a command extraction means that extracts an interpretable command from the searched plural commands;

an input information output means that outputs input information of the extracted command; and

an input means that inputs the character string information based on the input information for the extracted command.

12. A character-string information input apparatus according to claim 11, further comprising

a font information search means that performs a search for font information corresponding to the extracted command, wherein

said input information output means outputs the searched font information.

13. A character-string information input apparatus according to claim 11, wherein said input

means inputs character string information of at least two commands, one having character string information compatible with a limited language alone, and the other having character string information compatible with

5   plural languages.

14.   A character-string information input apparatus according to claim 11 or 12, wherein said command extraction means automatically extracts the

10   interpretable command.

15.   A character-string information input apparatus according to claim 11, wherein said apparatus is applied to a digital camera.

15

16.   A character-string information input apparatus according to claim 11, wherein said input means inputs character string information of at least two commands identical in content.

20

17.   A character-string information input apparatus according to claim 11, wherein said input means inputs both character string information inputted by a user and the character string information of the

25   extracted command identical in content to the character string information inputted by the user.

18. A character-string information input system
provided with a character-string information recording
apparatus and a character-string information input
apparatus, wherein

5   said character-string information recording
apparatus comprises:

a command analyzing means that analyzes
plural commands with character string information
identical in content; and

10   a command recording means that records the
analyzed plural commands, and

said character-string information input apparatus
comprises:

an input instructing means that instructs
15   input of character string information;

a search means that performs searches for
plural commands with character string information
identical in content to the character string
information the input of which has been instructed;

20   a command extraction means that extracts an
interpretable command from the searched plural
commands;

an input information output means that outputs
input information of the extracted command; and

25   an input means that inputs the character string
information based on the input information for the
extracted command.

19. A character-string information input method for inputting character string information in a command format, comprising the steps of:

instructing input of character string information;

5   performing searches for plural commands with character string information identical in content to the character string information the input of which has been instructed;

extracting an interpretable command from the

10   searched plural commands;

outputting input information of the extracted command; and

inputting the character string information based on the input information outputted for the extracted

15   command.

20. A storage medium in which a computer-readable program is stored, wherein said program comprises the steps of:

20   instructing input of character string information;

performing searches for plural commands with character string information identical in content to the instructed character string information;

extracting an interpretable command from the

25   searched plural commands;

outputting input information for the extracted command; and

inputting the character string information based
on the input information outputted for the extracted
command.

ABSTRACT OF THE DISCLOSURE

There is provided a character-string information output apparatus that can avoid any confusion due to a difference between character string commands, and that

5   can improve its expandability.

An image writing apparatus analyzes commands identical in information content to character string information to which an input instruction has been issued. The analyzed support commands are all written

10   onto a nonvolatile memory through a card drive. On the other hand, an electrophotographic image processing apparatus searches a DPOF file on the nonvolatile memory for all commands through a card read drive. From among the searched commands, a command that the

15   electrophotographic image processing apparatus can support is extracted as a target command for the electrophotographic image processing apparatus. Then, the ROM is searched to determine whether there is font information to output the character string information

20   included in the extracted command, so that the character string information is outputted based on the searched font information.

FIG. 1

100	101	102	103	104
CPU	ROM	RAM	CAMERA	CARD DRIVE

BUS

105

106	107	108
I/F	LCD	OPERATION PORTION

FIG. 2

200	201	202	203	204
CPU	ROM	RAM	PRINTER	CARD READ DRIVE

BUS

205

206	207
I/F	OPERATION PORTION

FIG. 3


```
CHARACTER-STRING
INPUT INSTRUCTION
        │
        ▼
SUPPORT COMMAND        ─ S1
        │
        ▼
   ◇ COMMAND          ── NO ──▶  COMMAND INPUT  ─ S3
S2   TERMINATION ?
        │
       YES
        │
        ▼
      END
```

FIG. 4
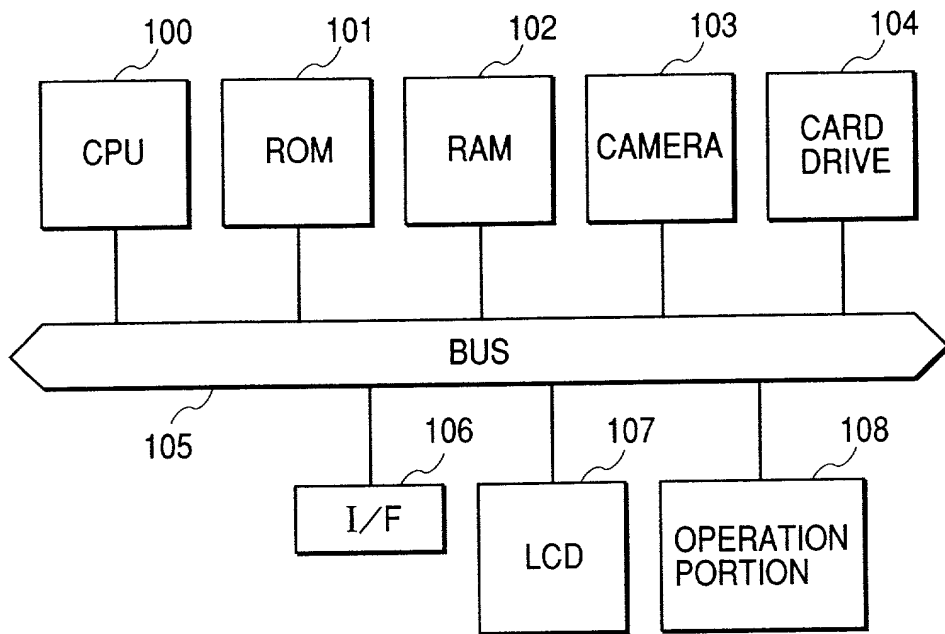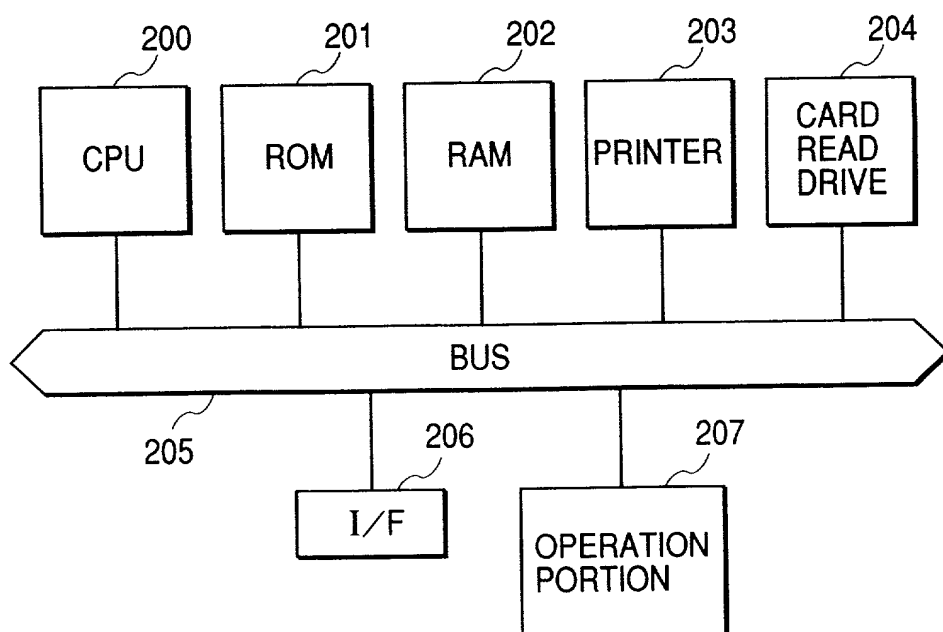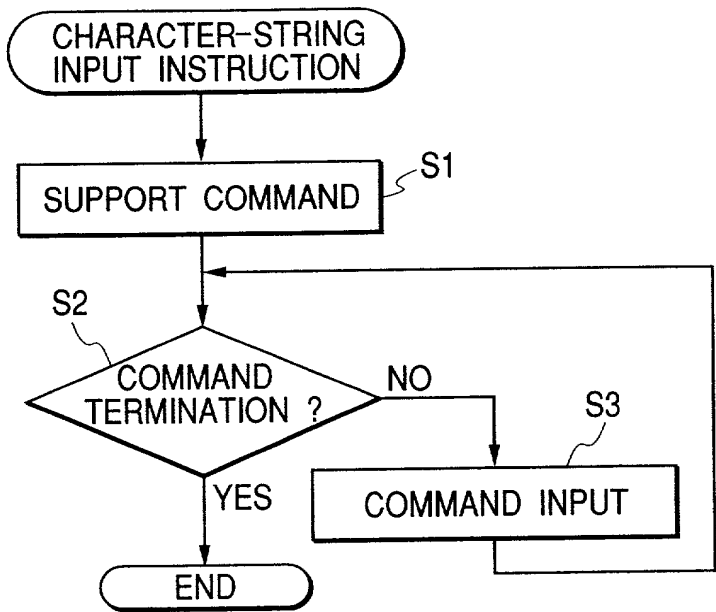
	USER NAME	ASCII	LENGTH	NULL TERMINATED STRING
1	USER NAME	ASCII	LENGTH	NULL TERMINATED STRING
2	USER NAME	UNICODE	LENGTH	NULL TERMINATED STRING

FIG. 5

CHARACTER STRING
OUTPUT INSTRUCTION

CORRESPONDING
COMMAND SEARCH — S11

SUPPORT COMMAND
EXTRACTION — S12

FONT INFORMATION
SEARCH — S13

S14

OUTPUT
POSSIBLE ? — NO

YES

CHARACTER STRING
OUTPUT — S15

END
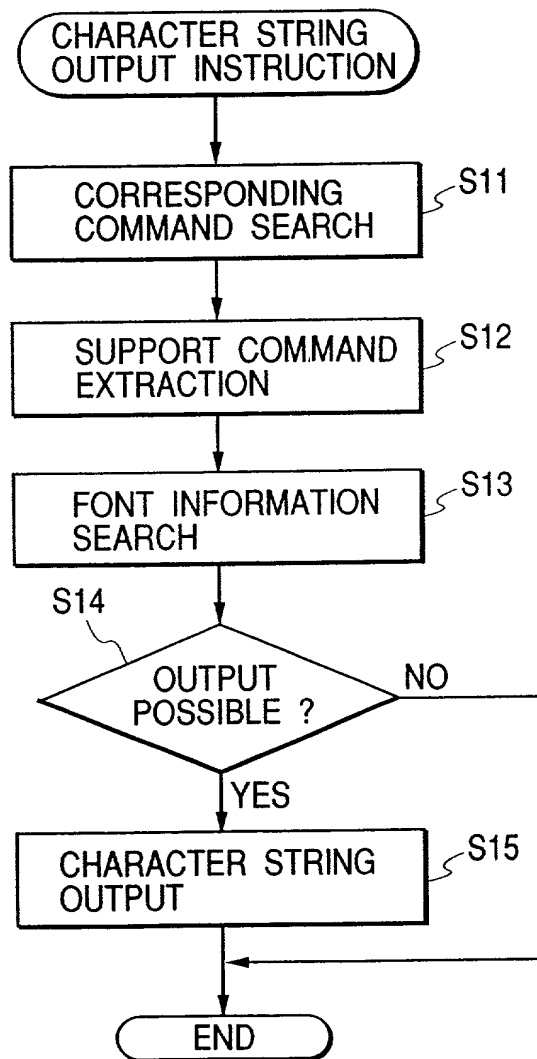
FIG. 6A

101

DIRECTORY INFORMATION
CHARACTER-STRING COMMAND INFORMATION INPUT PROCESS PROGRAM MODULE SHOWN IN FIG. 3

FIG. 6B

201

DIRECTORY INFORMATION
CHARACTER-STRING COMMAND INFORMATION INPUT PROCESS PROGRAM MODULE SHOWN IN FIG. 5
FONT INFORMATION

FIG. 6C

101

DIRECTORY INFORMATION
CHARACTER-STRING COMMAND INFORMATION INPUT PROCESS PROGRAM MODULE SHOWN IN FIG. 8
CHARACTER-STRING COMMAND INFORMATION INPUT PROCESS PROGRAM MODULE SHOWN IN FIG. 9
FONT INFORMATION

FIG. 7

FIG. 8

```
        ┌─────────────────────┐
        │ CHARACTER-STRING    │
        │ INPUT               │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │ CHARACTER-STRING    │  ⌐S21
        │ INPUT INSTRUCTION   │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │ SUPPORT COMMAND     │  ⌐S22
        │ EXTRACTION          │
        └─────────────────────┘
                  │
                  ▼
        ┌─────────────────────┐
        │ FONT INFORMATION    │  ⌐S23
        │ SEARCH              │
        └─────────────────────┘
                  │
     ┌────────────┤
     │            ▼         S24
     │         ◇─────────────◇
     │        ╱  COMMAND      ╲   YES
     │        ╲ TERMINATION ? ╱──────┐
     │         ◇─────────────◇       │
     │            │ NO               │
     │            ▼                  │
     │  ┌─────────────────────┐      │
     │  │ INPUT GUIDANCE      │⌐S25  │
     │  └─────────────────────┘      │
     │            │                  │
     │            ▼                  │
     │  ┌─────────────────────┐      │
     │  │ ALPHANUMERIC INPUT/ │⌐S26  │
     │  │ JAPANESE INPUT      │      │
     │  └─────────────────────┘      │
     │            │                  │
     └────────────┘                  │
                  ┌──────────────────┘
                  ▼
           ┌─────────────┐
           │    END      │
           └─────────────┘
```
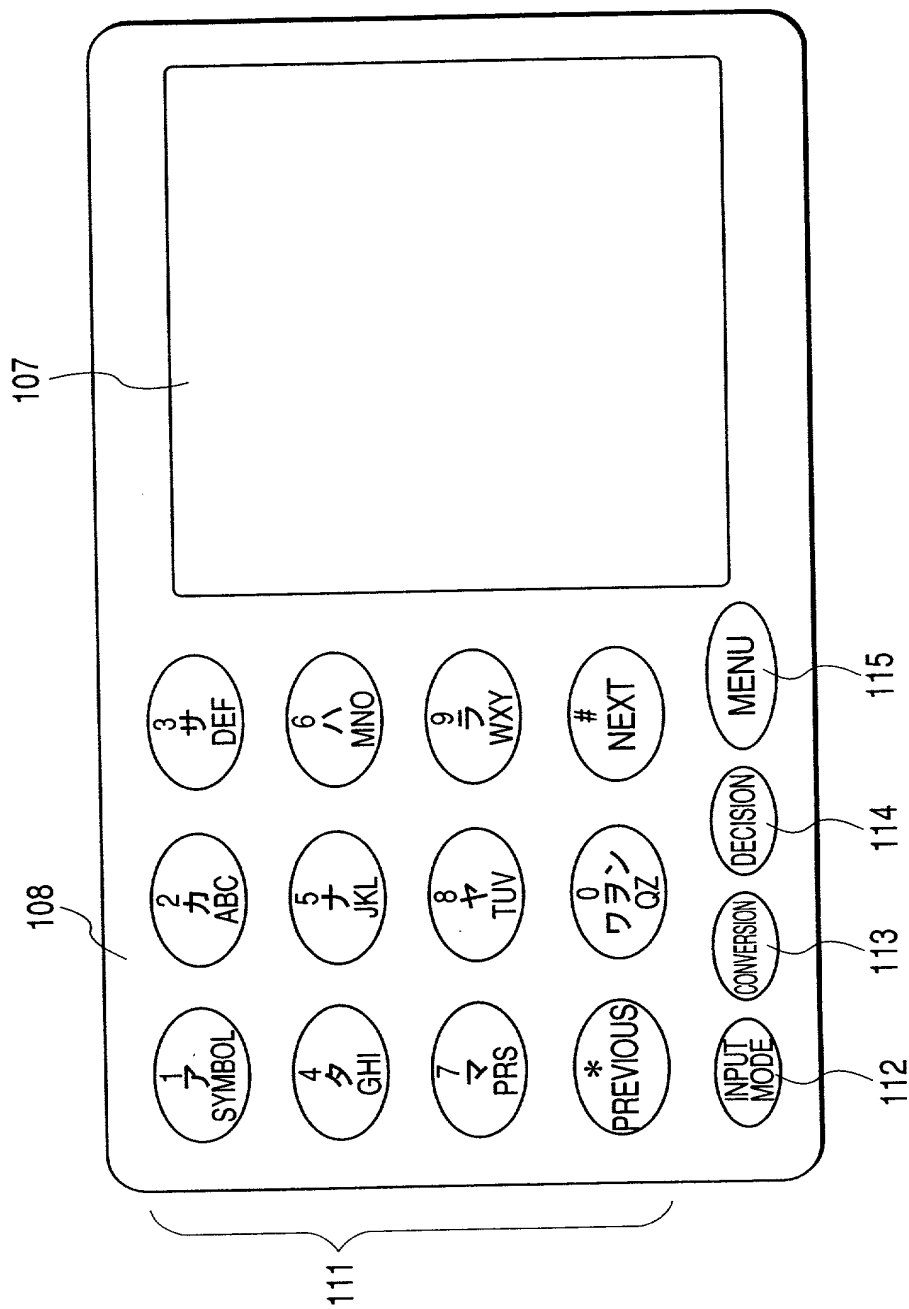
FIG. 9

CHARACTER–STRING
INPUT

CHARACTER–STRING
INPUT INSTRUCTION — S31

SUPPORT COMMAND
EXTRACTION — S32

FONT INFORMATION
SEARCH — S33

INPUT GUIDANCE
DISPLAY — S34

JAPANESE INPUT — S35

S36

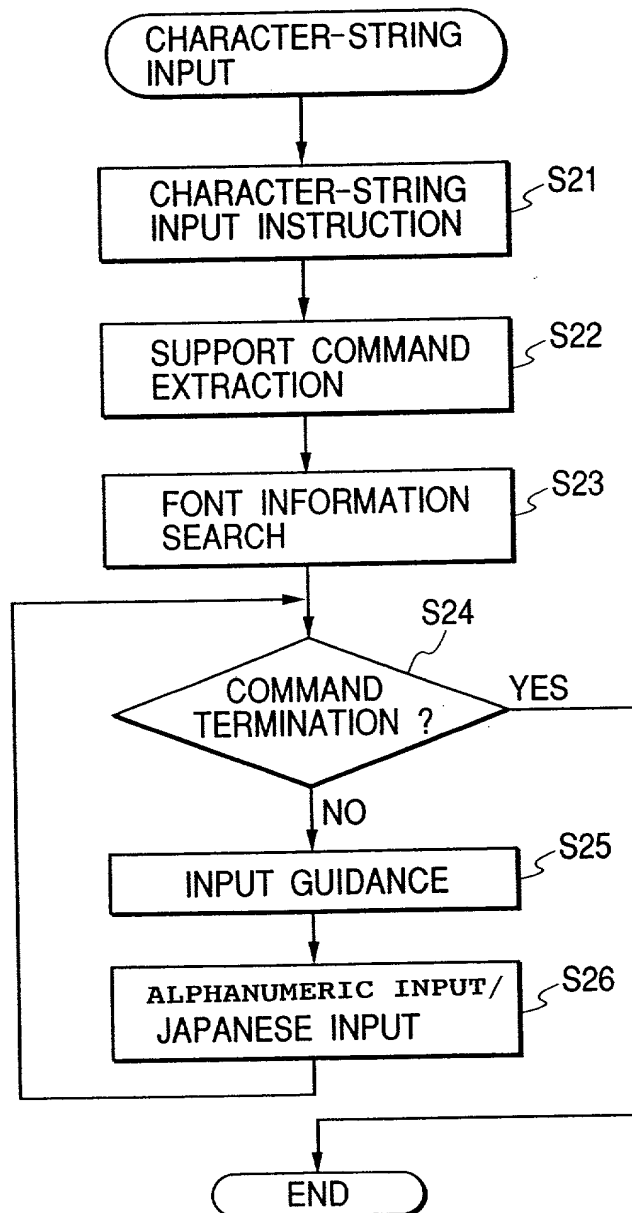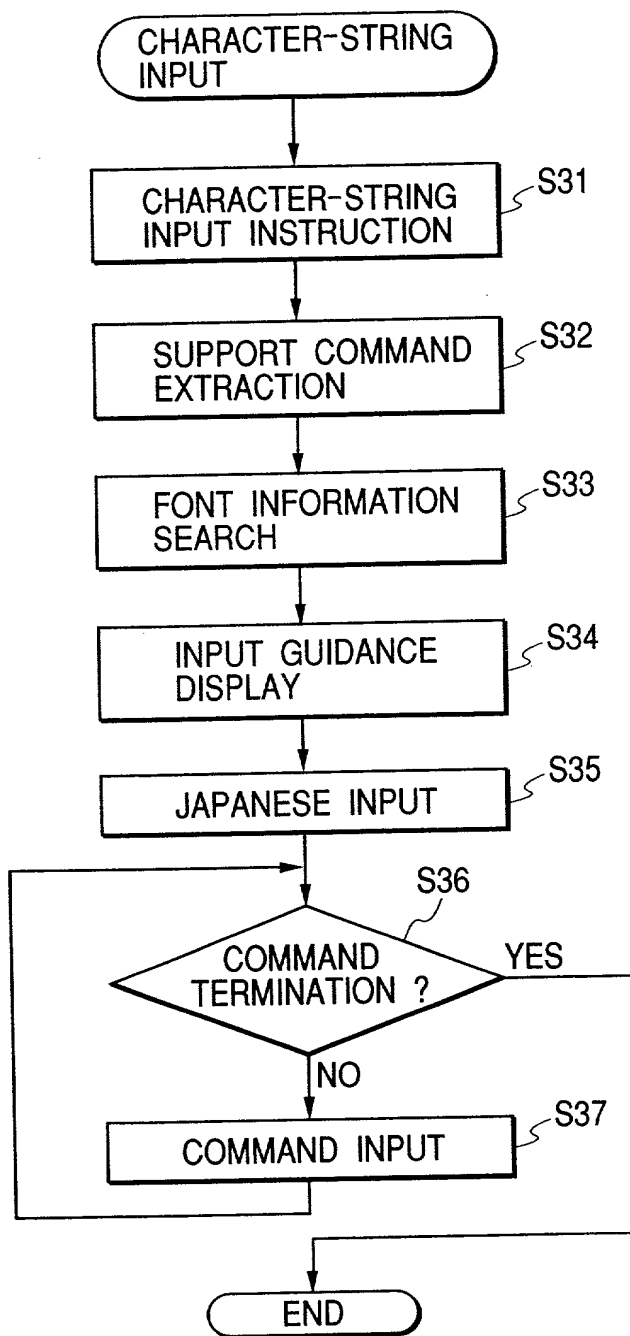COMMAND
TERMINATION ? YES

NO

COMMAND INPUT — S37

END

COMBINED DECLARATION AND POWER OF ATTORNEY
FOR PATENT APPLICATION
(Page 1)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name;

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled _____

```
CHARACTER-STRING INFORMATION OUTPUT APPARATUS,
CHARACTER-STRING INFORMATION OUTPUT SYSTEM,
CHARACTER-STRING INFORMATION OUTPUT METHOD,
CHARACTER-STRING INFORMATION INPUT APPARATUS,
CHARACTER-STRING INFORMATION INPUT SYSTEM,
CHARACTER-STRING INFORMATION INPUT METHOD,
STORAGE MEDIUM AND CHARACTER-STRING INFORMATION
RECORDING APPARATUS
```

the specification of which [X] is attached hereto [ ] was filed on _____ as United States Application No. or PCT International Application No. _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR §1.56.

I hereby claim foreign priority benefits under 35 U.S.C. §119(a)-(d) or §365(b), of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designates at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate, or PCT international application having a filing date before that of the application on which priority is claimed:

Country	Application No.	Filed (Day/Mo./Yr.)	(Yes/No) Priority Claimed
JAPAN	11-105104	13 April 1999	YES
JAPAN	11-329734	19 November 1999	YES

I hereby appoint the practitioners associated with the firm and Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and direct that all correspondence be addressed to the address associated with that Customer Number:

FITZPATRICK, CELLA, HARPER & SCINTO
Customer Number: 05514

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole or First Inventor ___SHINYA GOTO_____

Inventor's signature _____

Date __April 5, 2000__ Citizen/Subject of ___JAPAN_____

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